FLAVORFUSION™

Training Manual

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FLAVOR FUSION
TRAINING MANUAL

The products, technical information, and instructions contained in this manual are subject to change without notice. These instructions are not intended to cover all details or variations of the equipment, nor to provide for every possible contingency in the installation, operation or maintenance of this equipment. This manual assumes that the person(s) working on the equipment have been trained and are skilled in working with electrical, plumbing, pneumatic, and mechanical equipment. It is assumed that appropriate safety precautions are taken and that all local safety and construction requirements are being met, in addition to the information contained in this manual.

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TABLE OF CONTENTS

Product Overview **1**

Theory of Operation **1**

System Requirements **2**

Programming **3**

Programming Mode Flashing Sequences 3
Setting Water Flow Rate 4
Adjusting Syrup/Water Ratio (Brix) 5
Setting a Button to Dispense Non-carbonated Water Only 5
Setting a Button to Dispense Carbonated Water Only 5

Mechanical **6**

Disassembly 6
Control Box Components 6
Valve Removal 7
Valve Service 9
Carbonator Tank 9
Motor Removal 9
System Plumbing Diagram 10
Plumbing Diagram 11
Interface Board and Harness Pin-out Detail 12
Point-Point Wiring Diagram 13
Ladder Type Wiring Diagram 14
Troubleshooting 15
Diagnostics Guide for the Main Control Board (see FIGURE 22) 19

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PRODUCT OVERVIEW

- Brand density - 16 brands (14 chilled, 2 ambient) plus up to 8 bonus flavors in 30” wide;
- 255 lbs capacity cube ice only hopper;
- Internal cold carbonation with remote pump;
- Total carb/non-carb flexibility on each brand;
- Eye catching merchandising;
- Improved serviceability of agitator motor;
- Bonus flavors programmable for 1-4 second dispense;
- Valve positions programmable without special tools or PDA;
- Front inlet fittings;
- Key lock switch;
- 10” cup clearance;
- 30% more drip tray capacity;

THEORY OF OPERATION

- The FlavorFusion™ machine is an above counter ice/beverage unit with multi flavor nozzles and the capability to inject bonus flavors into the finished drink.
- The beverage is cooled via ice melting on an aluminum cold plate. Ice is kept on the cold plate by means of an opening in the hopper that drops ice onto the surface during agitation of the ice in the hopper.
- The unit contains a mechanical ice chute and gate mechanism.
- The ice agitation gear motor is removable from the gear box to ease removal of the motor during service and lower repair cost.
- The unit has six nozzles for dispensing brand and bonus flavors.
- Each brand nozzle serves four discreet flavors fed by four syrup valves, one plain water, and one carb water valve. Every position is flexible for use with either carb or non-carb water.
- Each bonus nozzle serves four individual flavors intended for injection into the finished drink. Bonus nozzles are fed by four syrup valves only. There is no option to dispense water out of the bonus nozzle without significant plumbing changes.
- Bonus flavors require a separate regulator setting on their BIB pumps (20 psi maximum).
- Brand and bonus flavors are controlled by means of six interface boards (one interface board per nozzle). The interface boards are common for each nozzle. Valve positions are configured on the membrane switch. No special tool or PDA is required.
- Valve flow rates are adjustable for 3.0-3.75 oz/sec finished drink dispense rate.
- Unplug the unit or turn off the key switch before attempting any electrical service on the unit, failure to do this can cause damage to the electrical components!

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SYSTEM REQUIREMENTS

Dimensions (in): . . . . . 29 x 30 x 39 (l x w x h). Height is measured to top of bin. Lid adds 3 in to height.

Counter Weight (lb): . . . . . 320 (plus ice weight)

Shipping Weight (lb): 330

Capacity: . . . . . 250 lb ice bin capacity (cube ice only)

Indoor installation only

40 to 90 ^{o}F ambient temperature

Electrical Rating: . . . . . 103-132 Volts
11 Amps

Water supply pressure: . . 50-60 psi at pump

Water volume: . . . . . 125 gph

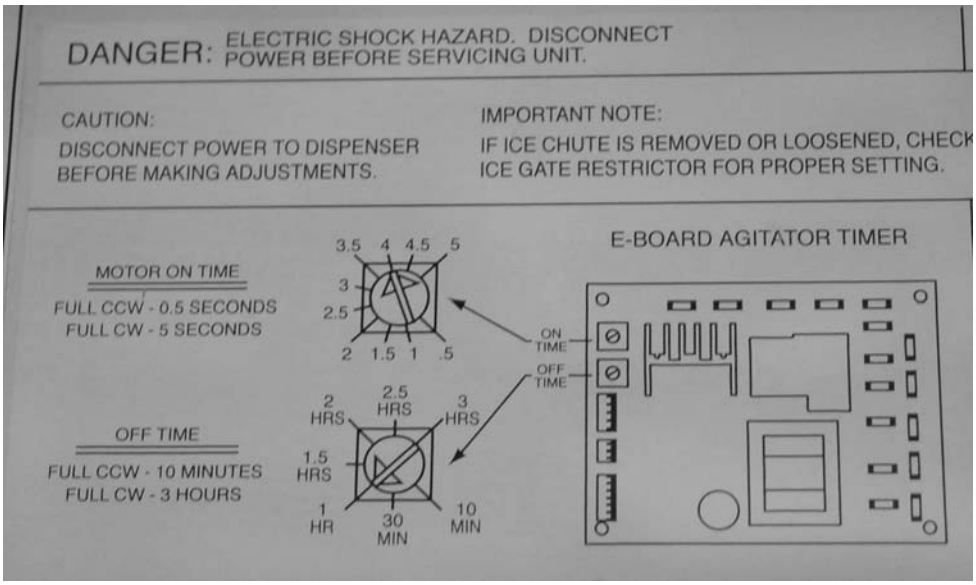
CO2: . . . . . 75 psi at carbonator tank

Syrup (brands): . . . . . 60 psi min

Syrup (bonus): . . . . . 20 psi max

Syrup supply lines: . . . . . .375” ID tubing min

NOTE: If water pressure is below 50 psi a water pressure booster is required for still water drinks.



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PROGRAMMING

The programming mode is exactly the same for both brand and bonus keypads.

To enter the programming mode, press and hold the two program buttons (see FIGURE 3) at the top of the keypad for approximately 4 seconds. All keypad LEDs will flash off for approximately 1 second to indicate the start of the programming mode.

To exit programming mode, press and hold the two program buttons for approximately 4 seconds. All keypad LEDs will flash off for approximately 1 second, resuming normal operation mode.

Programming Mode Flashing Sequences

Once in programming mode, each dispense button LED flashes in a sequence cycle according to one (1) of six (6) dispense types. For Brand Keypads, only dispense types 1 and 2 are used. For Bonus Flavor Keypads, dispense types 3 through 6 are used. The six (6) dispense types are described below, and shown in a timing diagram in FIGURE 1:

- **Dispense Type 1, Carbonated water dispense:** Solid LED
- **Dispense Type 2, Non-carbonated dispense:** Flashing LED 1.5 seconds ON, 1.5 seconds OFF
- **Dispense Type 3, 1-second flavor shot:** LED flashes once for ¼ second, followed by 3 seconds OFF
- **Dispense Type 4, 2-second flavor shot:** LED flashes twice for ¼ second ON, ½ second OFF, followed by 3 seconds OFF
- **Dispense Type 5, 3-second flavor shot:** LED flashes three (3) times for ¼ second ON, ½ second OFF, followed by 3 seconds OFF
- **Dispense Type 6, 4-second flavor shot:** LED flashes four (4) times for ¼ second ON, ½ second OFF, followed by 3 seconds OFF

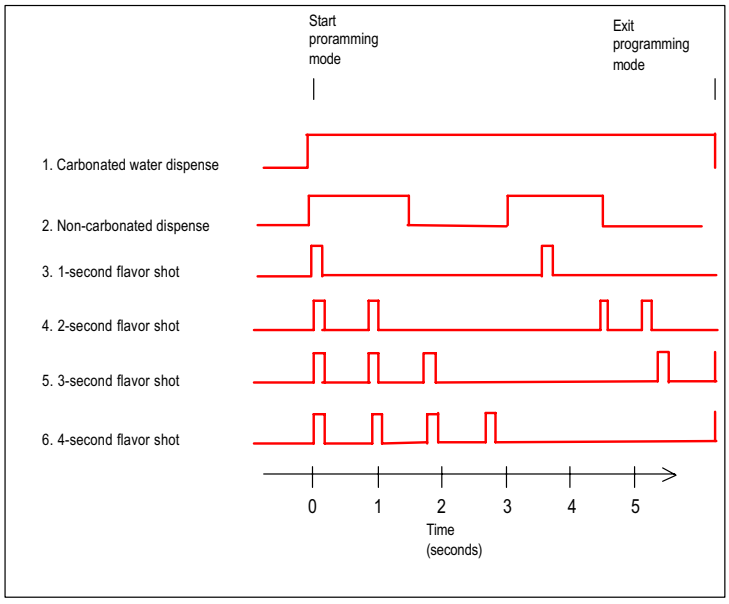
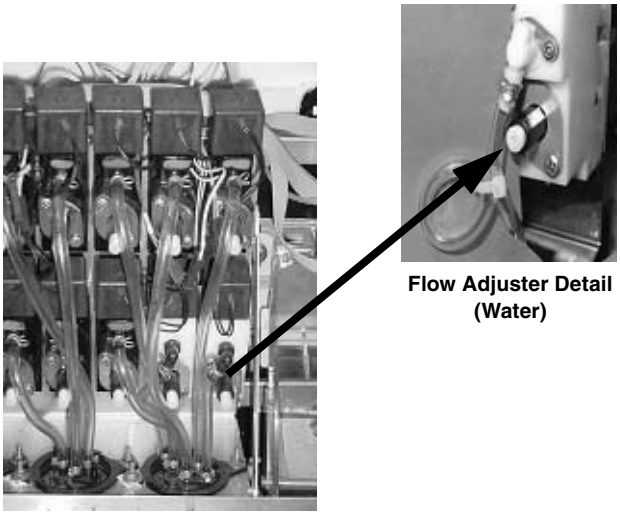


FIGURE 1

Setting Water Flow Rate

Setting the water flow rate will require a timed dispense. To accomplish this, the following procedure should be followed:

1. Enter programming mode for the valve block by simultaneously pressing and holding both programming buttons for 4 seconds (see FIGURE 3). The LED's for flavors 1-4 should flash off and then back on. The drink icon should turn off.
2. Set the valve block to a 4 second pour mode by simultaneously pressing and holding Flavor 1 and Flavor 4 buttons until the flash pattern for all four buttons changes.
3. Place an empty ratio cup under the appropriate nozzle and press the left program button for a 4 second dispense of carbonated water. There should be approximately 10 oz. dispensed.
4. If necessary, adjust the water flow control (see FIGURE 2), empty ratio cup, and repeat step 3. Otherwise empty ratio cup and repeat step 3 using the right program button for plain water.



Flow Adjuster Detail (Water)

FIGURE 2. Valve with Flow Adjusters (see plumbing diagram for plumbing and valve configuration)

5. **Exit 4 second pour mode by simultaneously pressing and holding Flavor 1 and Flavor 4 buttons until the flash pattern for all for buttons changes.**
6. **Exit programming mode by simultaneously pressing and holding both programming buttons for 4 seconds.**

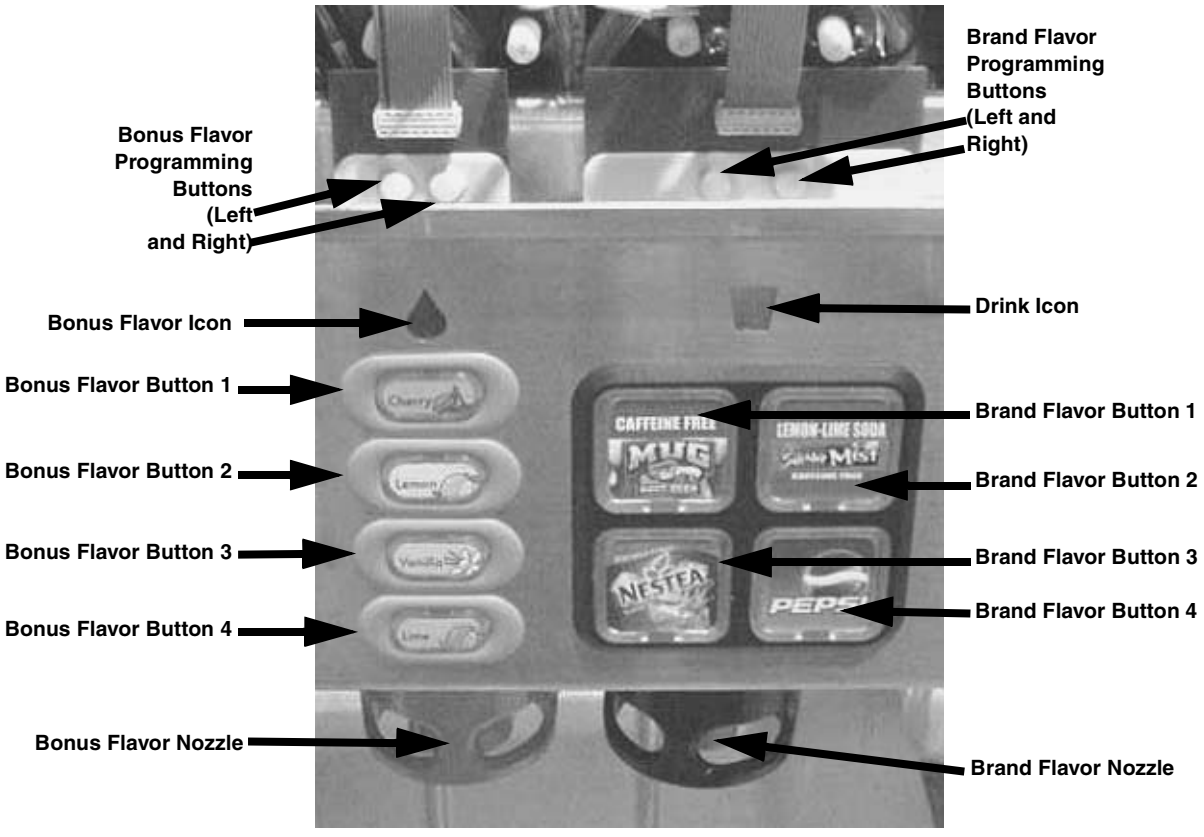


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FIGURE 3

Adjusting Syrup/Water Ratio (Brix)

Timed Dispense Procedure

1. Enter programming mode for the valve block by simultaneously pressing and holding both programming buttons for 4 seconds (see FIGURE 3). The LED's for flavors 1-4 should flash off and then back on. The drink icon should turn off.
2. Set the valve block to a 4 second pour mode by simultaneously pressing and holding Flavor 1 and Flavor 4 buttons until the flash pattern for all for buttons changes.
3. Place the water end of the ratio cup under the appropriate nozzle and press the left program button for a 4 second dispense of carbonated water. (Push the right program button for still water pour.)
4. Place the syrup end of the ratio cup under the nozzle and press the appropriate flavor button for a 4 second dispense of syrup. The fill line should be the same for both water and the syrup. Adjust the syrup flow control if necessary, then empty cup and repeat steps 3 and 4.
5. Repeat for all syrups in valve bank.
6. **Exit 4 second pour mode by simultaneously pressing and holding Flavor 1 and Flavor 4 buttons until the flash pattern for all for buttons changes.**
7. **Exit programming mode by simultaneously pressing and holding both programming buttons for 4 seconds.**

Setting a Button to Dispense Non-carbonated Water Only

1. Program the designated button to dispense non-carbonated water (see Programming Mode.)
2. Do not connect a syrup source to the inlet circuit of the designated button (1-14 or A1-A2.) If circuit 1 through 14 is chosen leave the coldplate inlet circuit plugged with the red cap. If circuit A1 or A2 is chosen, plug the end of the inlet tube with a red cap from the coldplate, or with tape.

Setting a Button to Dispense Carbonated Water Only

1. Program the designated button to dispense carbonated water (see Programming Mode.)
2. Do not connect a syrup source to the inlet circuit of the designated button (1-14 or A1-A2.) If circuit 1 through 14 is chosen leave the coldplate inlet circuit plugged with the red cap. If circuit A1 or A2 is chosen, plug the end of the inlet tube with a red cap from the coldplate, or with tape.

NOTE: The ambient circuits A1 and A2 do not give up a cold plate circuit.

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MECHANICAL

DISASSEMBLY

Control Box Components

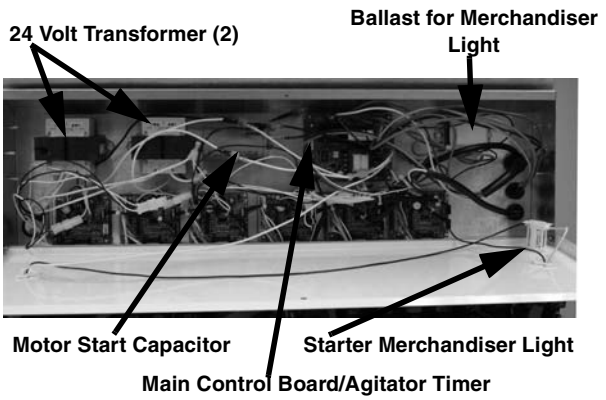

FIGURE 4

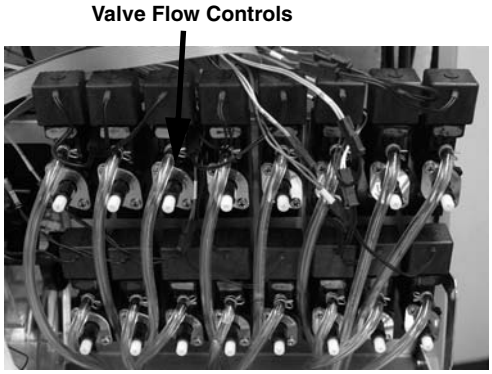

FIGURE 5

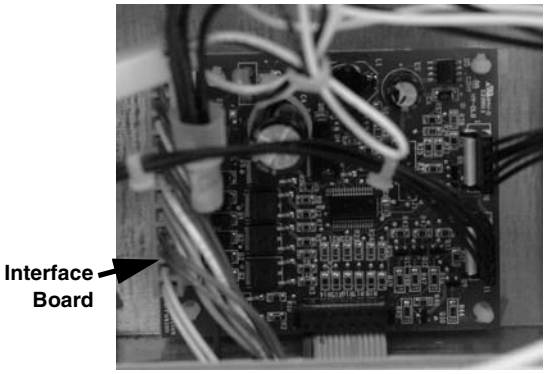

FIGURE 6

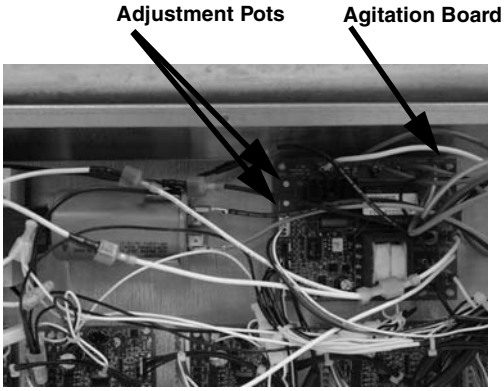

FIGURE 7

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VALVE REMOVAL

1. Pull on retaining bracket (both sides) so the switch panel will rotate out of the way (see FIGURE 9).

FIGURE 8

FIGURE 9

2. Unscrew the switch panel (one on each side).

FIGURE 10

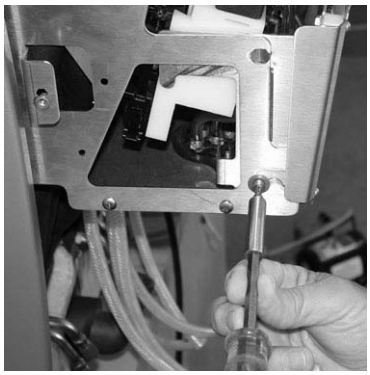

FIGURE 11

3. Place the tabs into the slot over the merchandiser lights.

FIGURE 12

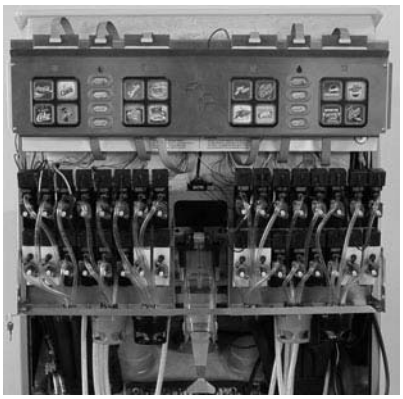

FIGURE 13

4. Place the valve removal tool on the back block release latch, keep the handle flat.

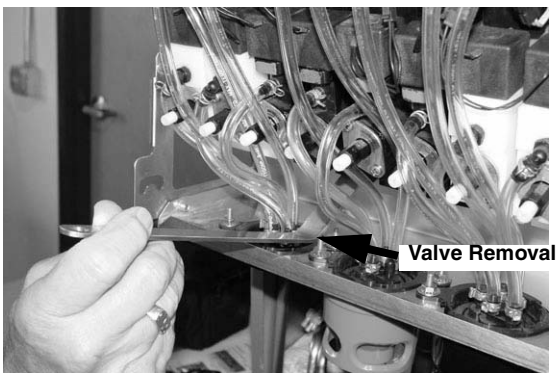

FIGURE 14

5. Tilt the valve removal tool up to release the latch.

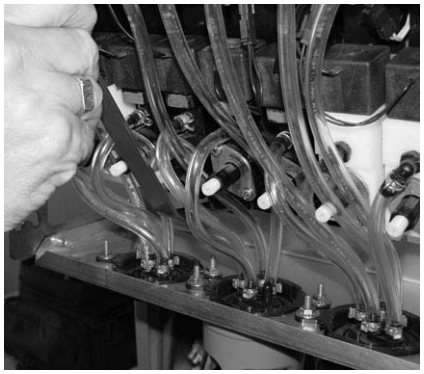

FIGURE 15

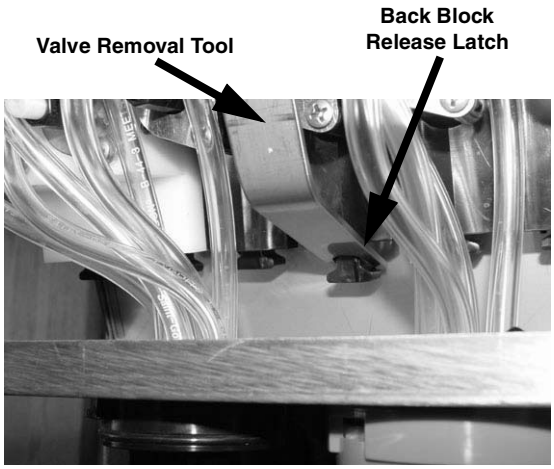

FIGURE 16

6. Pull the valve off the back block.

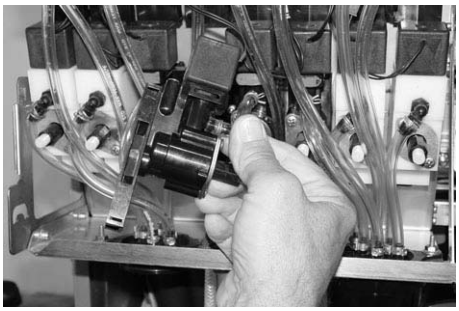

FIGURE 17

7. Push the valve on the back block and push up on the back block release latch to replace the valve.

FIGURE 18

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VALVE SERVICE

NOTE: Before servicing the valve the BIB connector must be disconnected an the pressure must be relieved.

1. Remove the locking screw after removing the valve from its mounting block.
2. Twist the solenoid 90°.
3. Pull the solenoid loose from the valve body.
4. To remove the tubing squeeze the spring clip together and pull off.

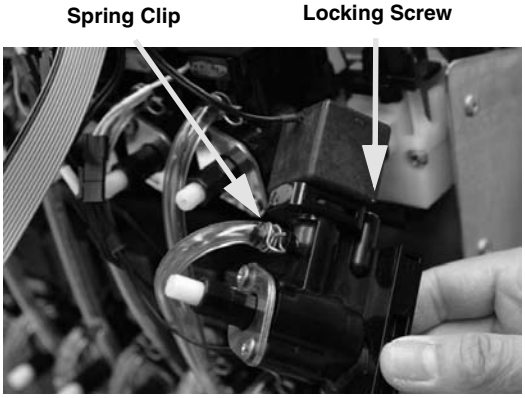

FIGURE 19

CARBONATOR TANK

Always disconnect water and CO_2 and relieve the carbonator pressure before removing the carbonator probe.

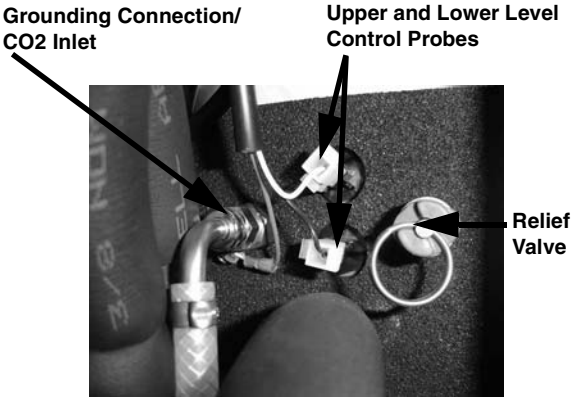

FIGURE 20

MOTOR REMOVAL

NOTE: Apply anti seizing lubricant to the threads of mounting bolts when service is required.

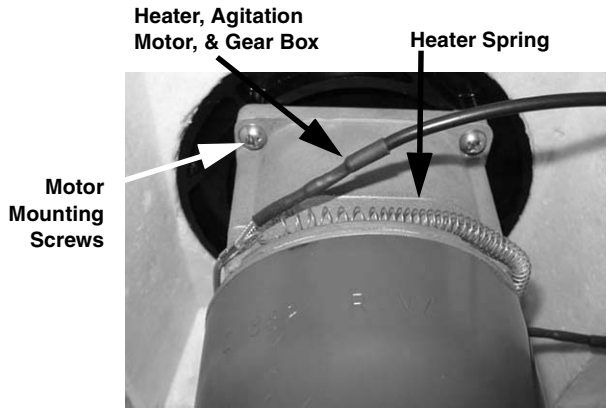

FIGURE 21

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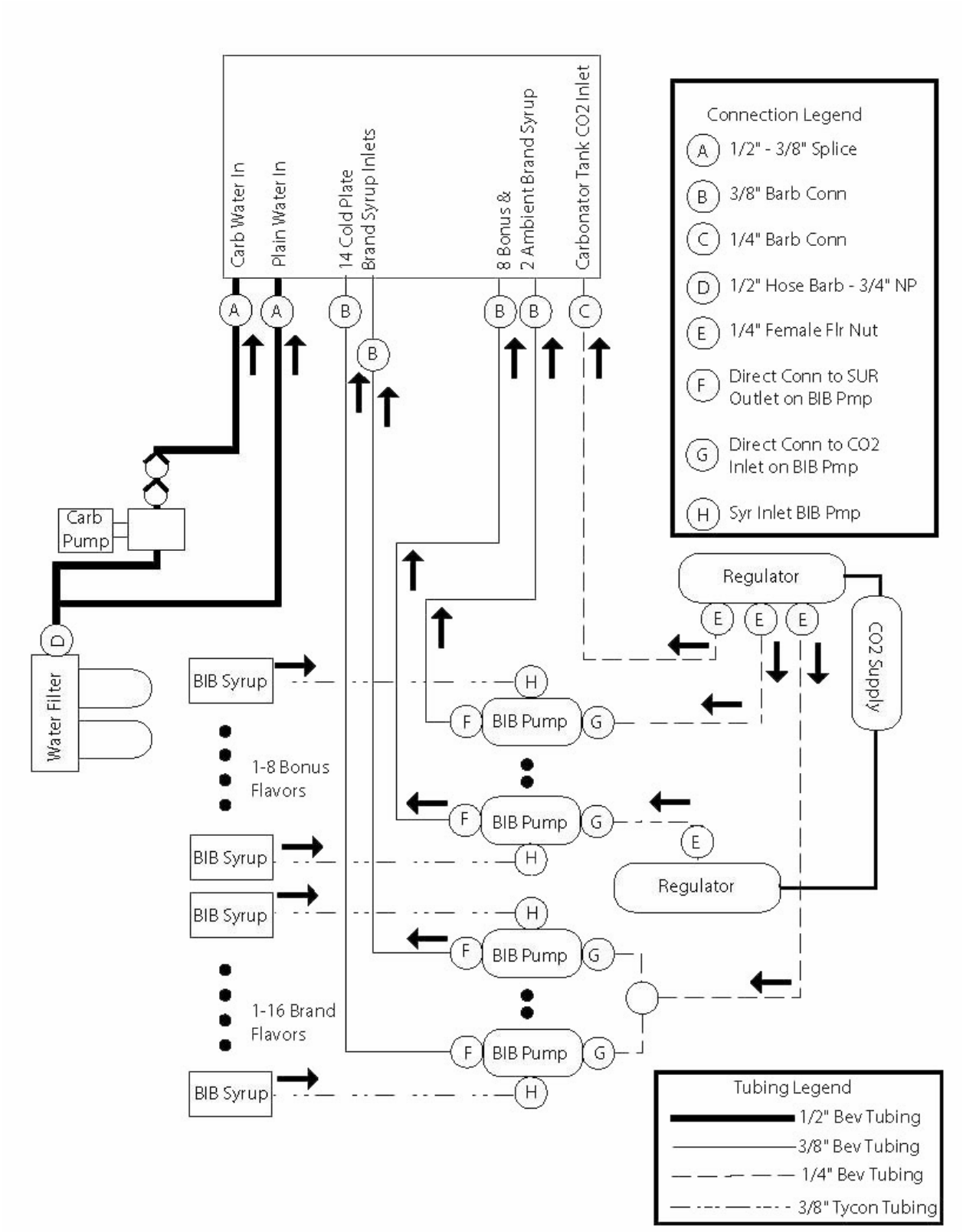
SYSTEM PLUMBING DIAGRAM



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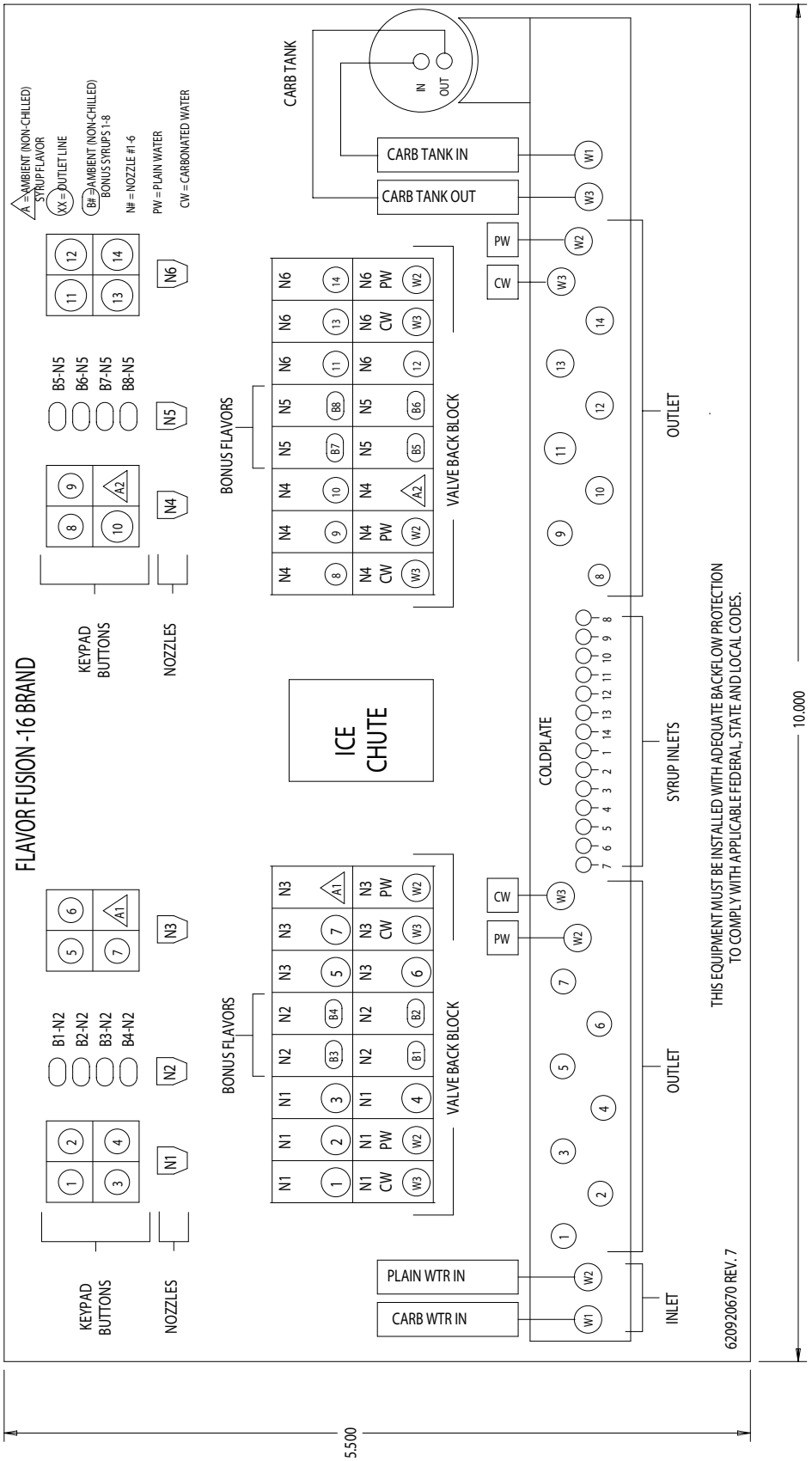
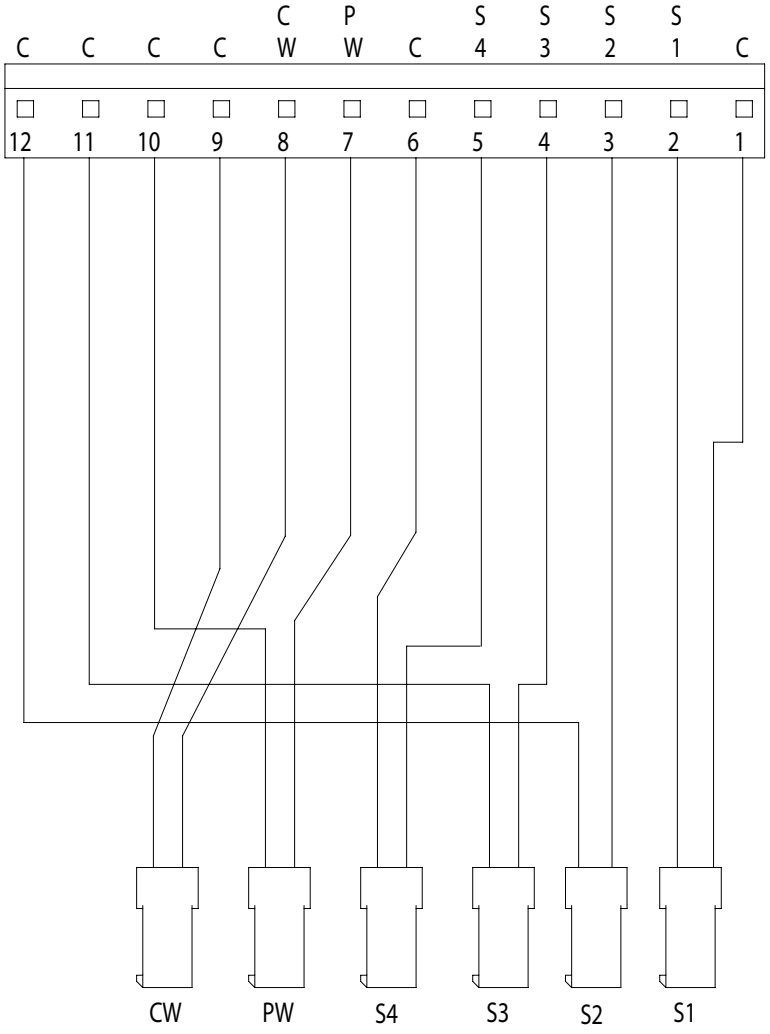
PLUMBING DIAGRAM



INTERFACE BOARD AND HARNESS PIN-OUT DETAIL



INTERFACE BOARD DETAIL

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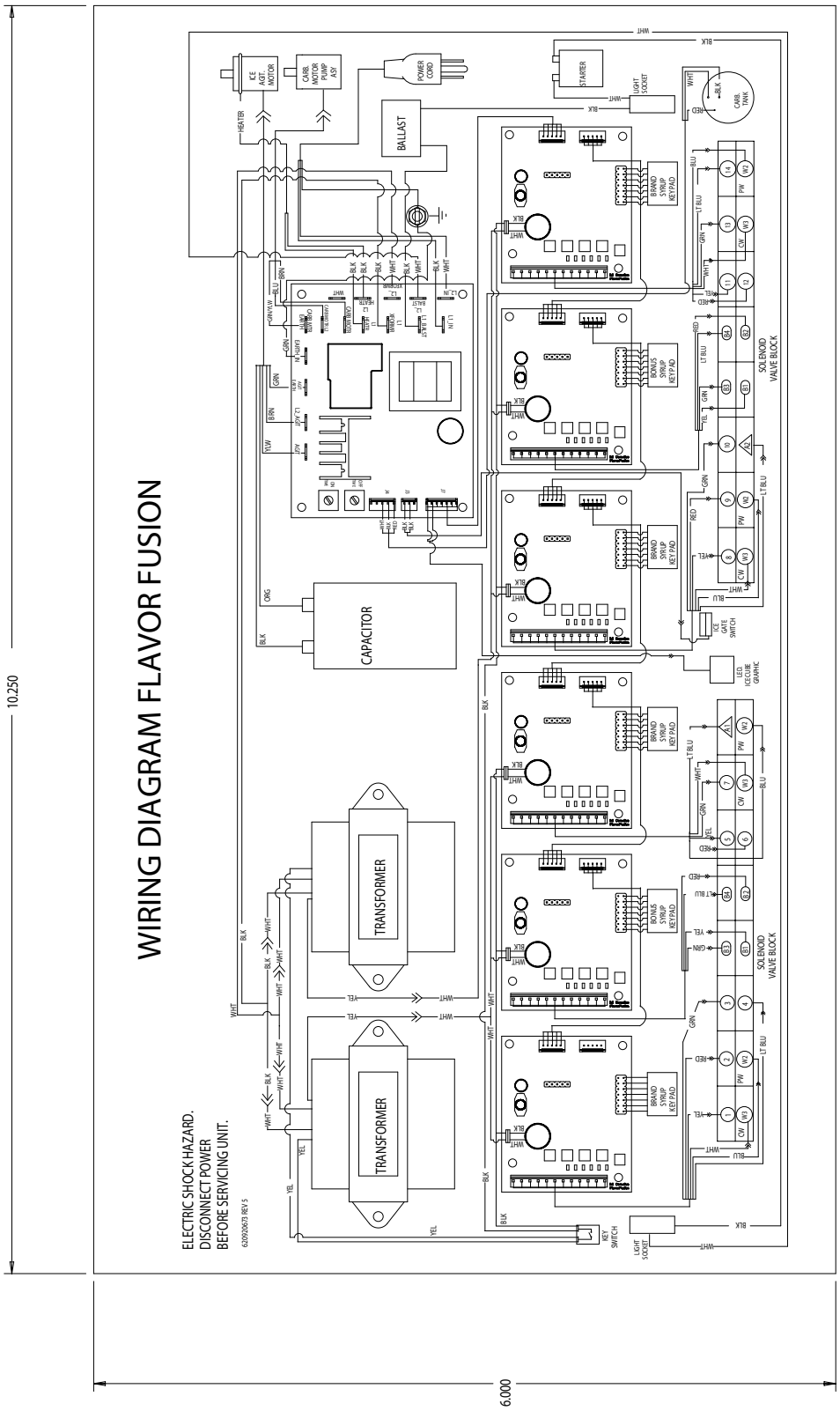
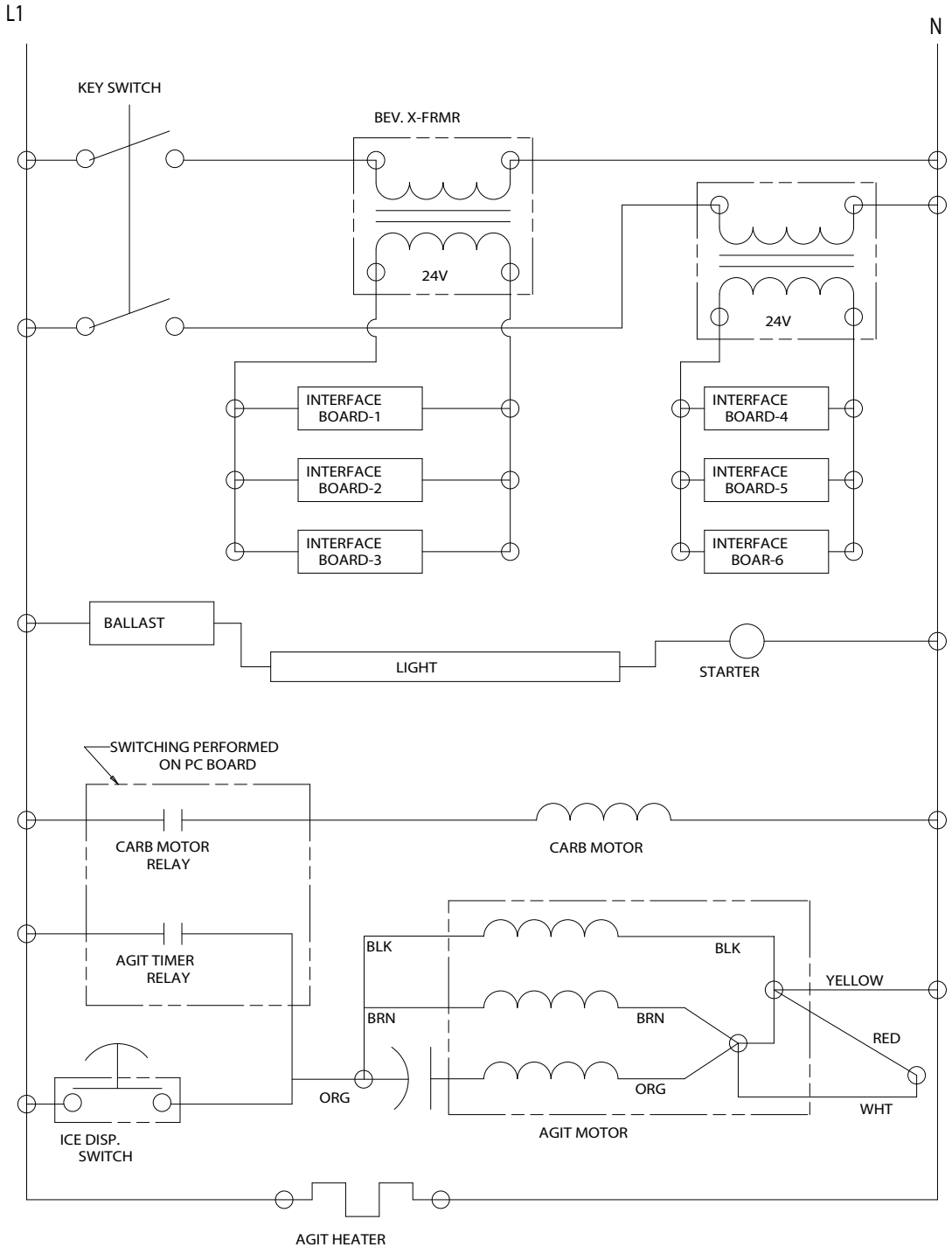
POINT-POINT WIRING DIAGRAM



LADDER TYPE WIRING DIAGRAM



WIRING LADDER SCHEMATIC 115V- FLAVOR FUSION

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TROUBLESHOOTING

IMPORTANT: Only qualified personnel should service internal components or electrical wiring.

WARNING: If repairs are to be made to a product system, remove quick disconnects from the applicable product tank, then relieve the system pressure before proceeding. If repairs are to be made to the CO_2 system, stop dispensing, shut off the CO_2 supply, then relieve the system pressure before proceeding. **If repairs are to be made to the electrical system, make sure electrical power is disconnected from the unit or the key switch has been turned off.**

Should your unit fail to operate properly, check that there is power to the unit and that the hopper contains ice. If the unit does not dispense, check the following chart under the appropriate symptoms to aid in locating the defect.

Troubleshooting the LED Lighting on Customer Interface Keypad (see page 19)

	Symptom	Cause	Remedy
1	Bonus Flavor Icon and/ or Drink Icon LEDs (see FIGURE 3) are ON continuously with four quick flashes every 30 seconds.	A. This indicates a poor connection in the lighting synchronization harness that connects the interface boards together.	A. Turn the keyswitch to disconnect power to the interface boards. Check the electrical connections between the harnesses that interconnect the right side of all interface boards together. Turn back the keyswitch to reconnect power.
2	Bonus Flavor Icon and/ or Drink Icon LEDs (see FIGURE 3) are not in sync with the lighting sequence,	B. This may result over time as the lighting sequence between push button pads can become slightly out of synchronization.	B. Unplugging the unit and performing a power up will re-synchronize the lighting sequence.
3	Keypad LED lighting is not working	A. Poor connection between interface board and keypad PCB	A. Turn the keyswitch to disconnect power at the interface boards. Check harness connections at each interface board.
		B. Keypad LED's are burnt out	B. Turn the keyswitch to disconnect power at the interface boards. Unplug the ribbon cable from one interface board and test it by plugging it into the neighboring interface board. If the keypad still doesn't light up replace the keypad PCB.
		C. Interface board is defective.	C. Turn the keyswitch to disconnect power at the interface boards. Unplug the ribbon cable from one interface board and test it by plugging it into the neighboring interface board. If the LED's light up the interface board is defective. Replace the interface board.
		D. Corrosion at connector between keypad and ribbon cable.	D. Replace keypad circuit board and ribbon cable.
		E. Main control board is defective.	E. Replace the main control board.
4	During standby mode, the brand and bonus LED icons do not alternate back and forth - instead they light together.	Bonus buttons are incorrectly programmed as brand buttons, or vice versa.	Check the programming of each keypad and set each button as CW, PW, or timed dispense based upon the flavor lineup.

Contact your local syrup or beverage equipment distributor for additional information and troubleshooting of beverage system.

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Dispenser Troubleshooting		
Symptom	**Cause**	**Remedy**
Blown fuse or circuit breaker	Short circuit in electrical wiring	Repair Wiring
	Inoperable agitator motor (shorted motor)	Replace gear motor
Agitator does not turn	No power	Restore power or plug in unit
	Improperly installed upper ice chute assembly (Reed switch is not being activated)	Check the upper ice chute assembly for proper assembly and operation
	Inoperable reed switch	Replace reed switch
	Electrical board driver circuit is defective	Replace main control board
	Gear motor has open circuit	Replace gear motor
	Reed switch is not activated Improper assembly of upper ice chute to lower chute.	Check to make sure tongue of upper chute engages into the back of the lower chute, ensure upper chute engages outside the lower chute, and snap front of chute into place.
	Broken wire in the 2-wire harness leading to the reed switch	Repair of replace 2-wire harness
	Bad connection at main control board, J3, pins 2 &3	Repair connection or replace 2-wire harness
Ice dispenses continuously	Ice gate mechanism is stuck in open position	Inspect gasket for proper position. Examine gate plate to see if it slides freely behind the lower ice chute.
	Stuck or bent ice lever (does not allow gate to close and open reed switch)	Examine ice dispense lever to see if it is bent.
Slushy ice or water in hopper	Blocked drains in cold plate	Remove access covers in cold plate cover & inspect/clean drains
	Poor ice quality due to water quality or ice maker problems	Correct water quality or repair ice maker
Beverage does not dispense	No 24VAC to valves	Restore 24 VAC to valves
	No CO_2 pressure	Restore CO_2 pressure
Beverage is too sweet	Valve brix requires adjustment	Adjust valve brix
	Carbonator is not operating	Repair carbonator
	No CO_2 in carbonator	Restore CO_2 pressure in carbonator

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	City water pressure supply low or inconsistent	Booster pump must be used if dynamic water pressure drops below 40 psig.
Unit will not dispense carbonated drinks. Dispenses syrup only.	CO_2 pressure in carbonator tank is too high.	Check CO_2 pressure regulator setting. 75 psig recommended. Relieve pressure from carbonator tank.
	Water valve will not open	Check electrical connection to water valve. Check resistance of coil (should be 9 ohms). Check for voltage at coil when brand button is depressed.
Unit will not dispense carbonated drinks. Spurts CO_2 and syrup only.	Carbonator tank is empty, because tank was emptied while power was applied to unit. 5 minute time-out of carbonator pump/motor occurred, and carbonator pump is locked off.	Unplug the unit and reconnect the unit. Main control board will reset, ice agitation will occur, and carbonator tank will refill to normal level.
	Note that this can occur while the water filter system is serviced or water supply is shutoff. If drinks are drawn from the dispenser while water pressure is shutoff, the carbonator pump starts and runs continuously, then shuts off on the 5 minute timeout.	1) low water pressure switch deactivates carbonator pump, 2) after 5 minutes reset and retry carbonator pump. If water supply is restored, the 5 minute timeout will not occur. Repeat reset a second time, but on a third time, then lockout carbonator pump, which will generate a service call.
Carbonated drinks are flat (low on carbonation)	CO_2 is out	Replace CO_2
	Carbonator tank is 100% filled because the city water pressure exceeds the carbonator tank CO_2 pressure regulator setting.	CO_2 setting for the carbonator tank is 75 psig, max water pressure is 60 psig. If necessary, install a water pressure regulating valve.
Low water pressure	Could be caused by excessively long runs (over 40 ft.) of 3/8” water supply line.	Increase line size to 1/2”
	Low water pressure	Add water pressure booster pump
	Plugged water filter.	Change water filter
	Water booster bladder has burst	Replace water booster tank/bladder
No Syrup or Watered down drink dispensed	Syrup supply is empty	Replace BIB
	BIB pump not working	Replace BIB pump
	No CO_2 or compressed air supply to BIB pump, or not enough pressure	Check CO_2 pressure regulator setting. 65 psig recommended. Replace CO_2 tank or fix compressor.

Carbonator Troubleshooting		
Symptom	**Cause**	**Remedy**

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Carbonator pump does not start to fill tank	Power cord for the carbonator pump motor is not connected.	Carbonator pump is powered off the main control board inside the electrical box of the unit. Check that the umbilical cord is connected from the unit to the pump motor terminal box.
Power cord is connected but carbonator pump does not run.	Carbonator pump motor is disabled.	Check the enable/disable switch on the carbonator pump terminal box and enable it, if necessary.
	Probes were dry, unit was powered up, water was not turned on, and carbonator did not fill.	This results in a 5 minute timeout. Unplugging the unit and plugging it in will reset the unit and start the carbonator pump.
	Water service was interrupted for more than 5 minutes.	Unplugging the unit and plugging it in will reset the unit and start the carbonator pump.
Carbonator pump is short cycling with every drink drawn	Lower liquid level probe reads “dry” while upper probe reads “wet”	Check color of leads going to probes. Black should go to bottom probe and white to top probe. Reverse if incorrect.
Carbonator tank overfills, overflows through relief valve, and pump shuts off after 5 minutes.	A. Poor electrical connections between carbonator tank and main control board	A. Check connections at carbonator tank and at connector J4 on the main control board.
	B. Broken wires between carbonator tank and main control board	B. Replace wire harness
	C. Defective liquid level probes	C. Replace both liquid level probes

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DIAGNOSTICS GUIDE FOR THE MAIN CONTROL BOARD (SEE FIGURE 22)

State	Observed State of Red LED	Sensor Input	Control Response	Service Remedy
0	Flash rate 3 seconds	Both probes read “wet”	Standby mode. Pump = OFF	No service required
1	Flash rate 1/2 second	Pump is OFF and HIGH probe reads “dry” and LOW probe reads “wet”	Waiting for level to drop below LOW probe. Pump = OFF	No service required
2	Flash rate 1/2 second	Both HIGH and LOW probes read “dry”	Normal mode. Pump = ON	No service required
3	Flash rate 1/2 second	Entered when HIGH probe does not detect liquid, and LOW probe does detect liquid, and pump is ON	Normal mode. Pump = ON	No service required
4	Flash rate 1 second	Entered when HIGH probe reads “wet” and LOW probe reads “dry”	**THIS IS AN ERROR CONDITION.**	- Check electrical connections at the carbonator tank, and at connector J4 on the main control board - Black wire should be connected to the LOW probe and also to Pin 4 of Connector J4 - Reverse the connections if incorrect - Replace harness if necessary
5	ON continuously, but “flickers” every 3 seconds	Poor signal connection to the carbonator tank. May result in short cycling of the carbonator pump.	Able to continue to function but carbonator pump short-cycles. Pump will come on each time a drink is drawn. **THIS SITUATION SHOULD BE CORRECTED.**	Check the harness connections of the red signal wire at both ends: 1) at the carbonator ring terminal and 2) at Pin 5 of the J4 connector at the main control board
6	ON continuously	Entered when pump has run continuously for 5 minutes	**THIS IS AN ERROR CONDITION.**	Unplug the unit and plug it back in. This will reset the unit's main control board and restart the carbonator pump.

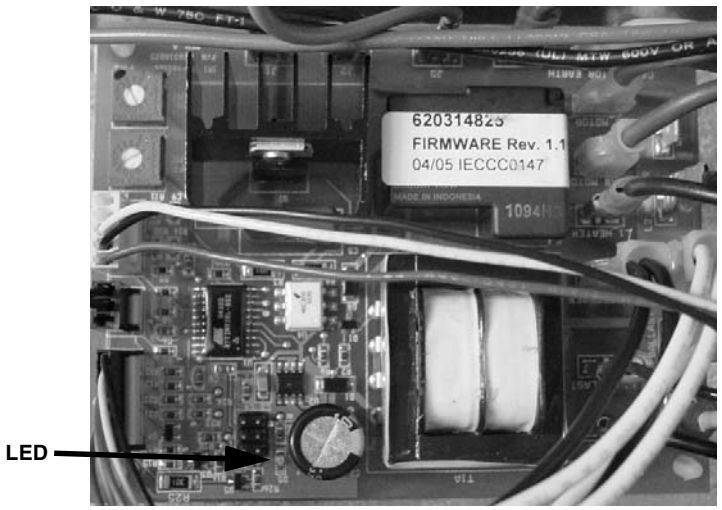

FIGURE 22

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